

ANIMAL KEEPERS'

FORUM

The Journal of the
American Association of Zoo Keepers, Inc.

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February 2013 Volume 40, No. 2



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Animal Keepers' Forum is published monthly by AAZK, Inc. Ten dollars of each membership fee goes toward the annual publication costs of *Animal Keepers' Forum*. Postage paid at Topeka, KS.

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 *printed on Recycled Paper*

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MISSION STATEMENT

(Revised April, 2009)

American Association of Zoo Keepers, Inc.

The American Association of Zoo Keepers, Inc. exists to advance excellence in the animal keeping profession, foster effective communication beneficial to animal care, support deserving conservation projects, and promote the preservation of our natural resources and animal life.

ABOUT THE COVER

This month's cover features the African wattled plover (*Vanellus senegallus*) photographed by Dawn Neptune while on the Masai Mara National Reserve in eastern Kenya. Occurring across sub-Saharan Africa, the wattled plover is a common, yet distinctive lapwing, considered the largest plover of southern Africa. Both the male and female have the characteristic long, yellow facial wattle. This species demonstrates strong adaptation skills. It is mainly a lowland species, frequenting marshes and muddy or sandy ground beside lakes, ponds, rivers and streams, as well as drier habitats such as savanna, grassland, airports and cultivated land. They are omnivorous with a diet consisting of grasshoppers, locusts, beetles, crickets, termites and various aquatic insects, also coarse grass, leaves and grass seeds. This species is more solitary than other lapwings, being found singly, in pairs or small groups. Their overall population appears to be stable, but the species is threatened by habitat loss and is hunted and traded at traditional medicine markets in Nigeria. *Source:* birdlife.org/datazone/speciesfactsheet.php?id=3167

Dawn spotted this beautiful bird while leading a Lewa Wildlife Conservation Safari. AAZK members are offered a tremendous opportunity to see how the money raised from Bowling for Rhinos is spent. The Lewa Wildlife Conservancy has generously offered a limited number of trips at a reduced rate for members and their friends. AAZK members receive a discount on lodging rates at the Lewa Safari Camp where proceeds go back into conservation. It's a great opportunity for professional research and to see firsthand the inspiring work being done by the Conservancy. These safaris are a life-changing experience and help spread BFR's fundraising goals. For more information see: aazk.org/committee/bowling-for-rhinos/lewa-safaris/

Articles sent to *Animal Keepers' Forum* will be reviewed by the editorial staff for publication. Articles of a research or technical nature will be submitted to one or more of the zoo professionals who serve as referees for *AKF*. No commitment is made to the author, but an effort will be made to publish articles as soon as possible. Lengthy articles may be separated into monthly installments at the discretion of the Editor. The Editor reserves the right to edit material without consultation unless approval is requested in writing by the author. Materials submitted will not be returned unless accompanied by a stamped, self-addressed, appropriately-sized envelope. Telephone, fax or e-mail contributions of late-breaking news or last-minute insertions are accepted as space allows. **Phone (330) 483-1104; FAX (330) 483-1444; e-mail is shane.good@aazk.org.** If you have questions about submission guidelines, please contact the Editor. Submission guidelines are also found at: aazk.org/akf-submission-guidelines/.

Deadline for each regular issue is the 3rd of the preceding month.

Dedicated issues may have separate deadline dates and will be noted by the Editor.

Articles printed do not necessarily reflect the opinions of the *AKF* staff or the American Association of Zoo Keepers, Inc. Publication does not indicate endorsement by the Association.

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FROM THE PRESIDENT

In the early 70's, New Zealand's Chatham Island black robin (*Petroica traverse*) were few in numbers. In fact, census findings indicated that their numbers had dropped to just about a dozen birds. Habitat change and the introduction of predator mammals (rats and cats), were responsible for the drastic decline. By the late 70's only five robins remained, including one established pair. Extinction for the black robin seemed imminent.



This story, first shared with me by past AAZK President and current *AKF* Editor, Shane Good, is a remarkable success story that exemplifies how a catastrophic series

can be overturned through the leadership of New Zealand conservationist Don Merton and the determination of his black robin recovery team. Merton trans-located the last remaining birds to nearby Mangere Island and began an intensive management program. Utilizing a cross-fostering technique, Merton removed the first clutch from "old blue", the only fertile female and placed the eggs in the nest of Chatham Island tomtits (*Petroica macrocephala chathamensis*). The tomtits successfully foster-reared the black robin nestlings and the black robins continued to lay another clutch of eggs and successfully raised their second brood. Within twenty years, the population of black robins had risen to over 200. Today, their numbers are somewhere between 250 and 300.

It is a noteworthy story of how a seemingly dismal situation can be overturned by thinking outside the box (or in this case, outside the nest). Although the status of the black robin is still endangered, Merton's innovative approach saved it from becoming extinct. It's an impressive success story that demonstrates the strength of the power of one.

Learn more about the story of the black robin at birdlife.org/datazone/speciesfactsheet.php?id=5482.

As always, I welcome your thoughts and input. E-mail me at bob.cisneros@aazk.org ; I would love to hear from you.

Bob Cisneros

"Some men see things as they are and say why - I dream things that never were and say why not."
-- George Bernard Shaw



Trees for You and Me 2013

Just a reminder to all AAZK Chapters that the deadline to raise money for this year's Trees for You and Me competition is midnight PST on 1 March 2013. Each AAZK Chapter can determine the way they want to raise money. Projects in the past have included bake sales, polar plunges, miniature golf events, garage sales, silent auctions, fun runs, spaghetti dinners, car washes, recycling programs, even a night out at your local hang out that allows a

50/50 raffle as a final fundraiser, and more.

Remember to report your total funds raised to Polar Bears International® on 16 February and 2 March 2013 at AAC@PolarBearsInternational.org

Each participating AAZK chapter is responsible for following AAZK National's requirements for reporting on funds raised for conservation in the re-chartering packet. PBI requires that each AAZK Chapter report about the planting activity with a photo and description on PBI's new community, My Planet, My Part. Acres for the Atmosphere projects or donations to tropical forests planting should be completed within six months of the campaign fundraiser close. (Reports to My Planet, My Part would occur between April-November, 2013.)

A challenge prize will be awarded to the team with highest amount of funds reported to PBI by February 16, 2013 that were donated by Midnight MST February 15, 2013. The team receives a bush to plant in a public location that is a native species to that area with a purchase value from a commercial nursery of no more than \$25.

The first place will be awarded to the team with the most funds reported to PBI on March 2, 2013 that were donated by Midnight MST March 1, 2013. The team receives a tree to plant in a public location that is a native species to that area with a purchase value from a commercial nursery of no more than \$100.

The main focus of Trees for You and Me is drawing attention to the benefits of urban tree-planting locally or globally and the associated educational programming and awareness such events create.

Good luck to all the AAZK Chapters!

Christy Mazrimas-Ott
Trees for You and Me, Chairperson



The Brookfield Zoo's AAZK Chapter, the 2010 Trees for You and Me Champions, planting a redbud (*Cercis canadensis*).

A Message from Dr. Steven Amstrup, Chief Scientist, Polar Bears International

Dear AAZK Members,

As a young biologist in the 1980s studying polar bears in Alaska, I could stand on the beach in summer and see the pack ice just offshore. With binoculars, I might even see a polar bear hunting for seals sunning themselves on that ice.

Today—from that same spot—open water stretches as far as the eye can see.

Dramatic changes like these threaten the future of the polar bear. But loss of polar bears and their ecosystem is only part of the story. Warming global temperatures are already inflicting major devastation in the form of extreme weather events. Drought, hurricanes, tornadoes, and wildfires will only increase in frequency and intensity if we allow the world to continue to warm.

Unless we drastically reduce greenhouse gas emissions, humans will be living in a vastly different world, and the future of polar bears will be lost. But we must remember that the story hasn't ended. We still have time. That's why I'm writing to you today.

As chief scientist at Polar Bears International, I work with a skilled and passionate team of scientists and conservationists on the frontlines of polar bear conservation. Our primary focus these days is outreach and action.

Polar Bears International's effectiveness in building momentum and inspiring change gives me hope — and today I'm asking for your support so we can continue our research, build on our conservation successes, and offer a brighter future not only to polar bears, but to butterflies, frogs, and, yes, humans.

If we allow ourselves to get distracted from the mission of reducing greenhouse gases, we'll simply become polar bear historians — and the consequences will extend far beyond the Arctic.

We still have time to save polar bears and their arctic habitat — and with your help, we can do just that.

Gratefully,

Steven C. Amstrup
Chief Scientist

Celebrate
International Polar Bear
Day on February 27, 2013.



**Support AAZK's and PBI's Polar Bear Programs Today:
Trees for You and Me:**

polarbearsinternational.org/our-work/educational-programs/trees-for-you-and-me

Acres for the Atmosphere:

polarbearsinternational.org/our-work/educational-programs/acres-for-the-atmosphere

BOWLING FOR RHINOS Reminder FOR 2013



It's that time of year again! If you have not done so already:

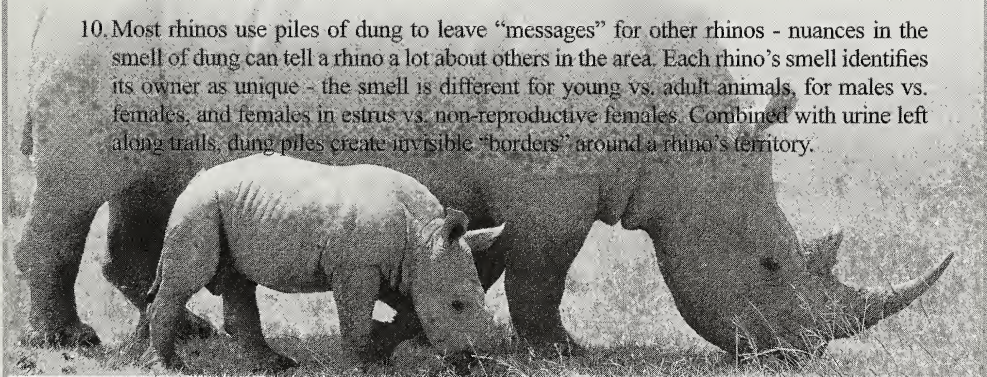
1. Form a "Bowling For Rhinos" committee
 2. Set the date for your 2013 event
- Most committees are made up of a few key individuals. Docents can be an excellent addition to your committees.
 - When choosing a date, remember to aim for the first week of May. However, it is not a problem if this does not work for your Chapter. Choose the date that works best for your Chapter.
 - Check the zoo's calendar of events for any conflicts and any other events taking place such as sporting events.
 - Once you have chosen a date, make every effort to get the date on all calendars of events possible including the Chamber of Commerce.
 - Post the dates on the zoo/AAZK websites, Facebook®.
 - Meet with zoo staff to get your event date and registration info listed in the zoo maps. If this is not possible, perhaps an insert would work.
 - Meet with your zoo's PR staff member for ideas to publicize your event.
 - Set your goal to raise at least 10% more than last year by reaching 10% more people.
 - To be successful in reaching our \$500,000 annual goal we need EVERY Chapter to participate in some fashion. If you don't have time to organize an event, donations are always welcome!

**Please be sure to send your event date info to
Patty Pearthree at ppear3@gmail.com ASAP.**

Do you need some help in promoting your next Bowling for Rhinos event? Looking for some interesting facts to share with your BFR participants?

Try these interesting rhino facts and tidbits:

1. A group of rhinos is called a “crash”.
2. White rhinos aren’t white. (And black rhinos aren’t black.) The white rhino’s name is taken from the Afrikaans word describing its mouth: “weit”, meaning “wide”. Early English settlers in South Africa misinterpreted the “weit” for “white”.
3. Rhinos are fast! They can run up to 30 – 40 miles per hour, which may not sound like much, but if one is running straight towards you it feels like a NASCAR race car is coming your way.
4. Rhino pregnancies last 15 – 16 months. Yikes!
5. A rhino’s skin is much softer than it looks, and is actually quite sensitive to sunburns and insect bites. (That’s why rhinos like rolling in the mud so much – it helps to protect them from the sunburns and insects.)
6. Contrary to the common myth, there is no evidence that rhinos stamp out forest fires!
7. The white rhino is the largest rhino (and the largest land mammal after the elephant) – they can weigh up to 6,000 pounds. The Sumatran rhino is the smallest rhino, weighing in at a mere 1,300 – 2,000 pounds.
8. Rhinos have poor eyesight, but very well-developed senses of smell and hearing. (And they will charge at you when startled – the best way to escape is by climbing a tree, if one is handy!)
9. African rhinos have a symbiotic relationship with oxpeckers, also called “tick birds”. In Swahili, the oxpecker is called “askari wa kifarū”, which means “the rhino’s guard”. The oxpecker eats ticks and other insects it finds on the rhino, and creates a commotion when it senses danger.
10. Most rhinos use piles of dung to leave “messages” for other rhinos - nuances in the smell of dung can tell a rhino a lot about others in the area. Each rhino’s smell identifies its owner as unique - the smell is different for young vs. adult animals, for males vs. females, and females in estrus vs. non-reproductive females. Combined with urine left along trails, dung piles create invisible “borders” around a rhino’s territory.



For more facts, visit rhinos.org/25-things-you-didn-t-know-about-rhinos.

An Interview with AAZK Board Member Deana Walz



1. *AKF - You just recently finished your first year on the AAZK Board of Directors. What was your first year like on the Board?*

Deana - I really enjoyed my first year on the Board. It is an exciting time for the organization and I am proud to be a part of it. I was surprised that I was not completely overwhelmed throughout the year. Although, Board meetings prior to the National Conference can make you very tired for the rest of the Conference, but that could be because I am getting older.

2. *AKF - What would you say to any of our members who are considering running for the Board in this year's election?*

Deana - If you are considering running for the Board in this year's election, do it. It is a great opportunity to make a difference and help direct where AAZK is going. Do not be intimidated by the nomination process, it was rather simple. If you are interested, let an AAZK member know so they can nominate you. That's what I did.

3. *AKF - What Committees do you oversee? What is new and on the horizon for those committees?*

Deana - I oversee the Behavioral Husbandry Committee. This was an easy transition for me because I was the Chair of the Committee prior to becoming a Board member. The upcoming year for the BHC is going to be a busy one. Along with editing the Training Tales and Enrichment Options columns for the *Animal Keepers' Forum*, we are preparing for next year's annual conference, putting together distance learning programs, and formulating ideas for updating the BHC portion of the website. We will be welcoming several new members onto the committee this year and we look forward to some new energy and ideas. If anyone has ideas they would like the BHC to pursue, feel free to contact me.

4. *AKF - AAZK has often been portrayed as a "mammal-centric" organization, yet you are an aviculturist by profession. Do you feel that AAZK provides enough products and services for the non-mammalogists in our profession? Can you provide some examples?*

Deana - I love this question! Yes, I feel AAZK is a well-rounded organization that has something to offer everyone who works with any species. I have really enjoyed the taxon-specific *AKFs* which have focused on birds as well as some other facets that we all deal with but do not receive a lot of attention, such as the geriatric animal edition. The conferences allow me the opportunity to meet more “bird nerds” and be able to discuss and address common challenges we face. The AAZK online message board also helps us connect with other keepers in our specialty. I wish members utilized it more because it can be a huge resource. Working at an aquarium, the one thing I would like to see AAZK get back involved with is the aquatic side of things. Back in the day we had a column in the *AKF* called the Water Column. I still use those past articles as a reference but realize times have changed and they may be out of date.

5. AKF - Describe your greatest day as a zoo keeper.

Deana - This is a hard question to answer. There have been many great days. There’s nothing like coming back from vacation and having all my animals excited to see me (yes, penguins get excited!). But if I was to choose just one day, I would say it was when the Utah Chapter of AAZK hosted the National Conference in 2008 and we hosted a fabulous zoo day shared between two facilities. I was very excited to be able to have fun with our bird show at Tracy Aviary and really make it special for the delegates. The Chapter worked really hard and had a very successful conference and made many memories to last a lifetime.

6. AKF - Describe your worst day as a zoo keeper.

Deana - My worst day as a zoo keeper is easier to remember as I am sure it is for all of us. When I became the primary keeper of the feline building, the majority of the collection was middle-age or older. Our Bengal tiger, Orissa was not doing that well although, being an optimist, I figured that it was something we would be able to fix with antibiotics. We decided to do a workup and found that she had congestive heart failure. I was shocked by the amount of fluid around her heart. We were deciding what our options were when Orissa made the decision for us and passed away on the table. Meanwhile, back at the feline building, one of our servals, Sebastian, starting acting very strangely. The veterinarian quickly went to the building, darted the cat and brought him down. He too had a lot of fluid around his heart. Our team discussed our options, none of which seemed feasible, and decided to euthanize him. That day nearly broke me. Both cats had made an impression on me and I will always remember the memories we shared.

7. AKF - A keeper recently asked me to describe “the best zoo keepers in the profession”. Can you give me your opinion on what the best zoo keepers are doing? What is innovative and what establishes best practice in our profession?

Deana - I feel that the best zoo keepers are those that push the envelope. They are the people who are looking for new ways to improve the welfare of their animals, helping educate visitors, and being able to think outside of the box to solve the myriad of challenges we are faced with daily. At this year’s annual conference, I witnessed this



Deana’s favorite animal is the gentoo penguin. Read more about why she thinks these birds are so unique.

“out of the box” thinking when it came to training otters and gibbons. Being able to share her experience with us, sparked more ideas for me to try back at my facility. Communication between all of us in this profession will be the key to continued growth in our field.

8. AKF - In one paragraph, tell us about your favorite species, why we should care about it, and where we can learn more about it.

Deana - One of my favorite species is the Gentoo Penguin (*Pygoscelis papua*). For those of you who are privileged to work with them, you know why I would say they are a favorite of mine. The Gentoo has a huge personality and they are one of the most active penguins I have ever seen in captivity. Penguins are an indicator species. They tell us when something is going wrong with our ocean ecosystem. When their populations begin dropping, it tells us that there is a possibility that the fish they eat are not reproducing at a normal rate, or that the ocean water is warming. To find out more about the Gentoo or the other 16 species of penguins, check out the Global Penguin Society (globalpenguinsociety.org) as well as the Penguin TAG (pooopenguins.org).

9. AKF - As a Board Member, what is the one thing that has you most excited about AAZK's future?

Deana - I am very excited about the more hands-on approach to conferences. The Professional Development Committee is doing a fabulous job developing workshops where we can enhance our animal care skills in a multitude of ways. I cannot wait to see what the North Carolina conference has in store for us.

10. AKF - If you could tell the AAZK membership one last thing, what would it be?

Deana - Get involved in your organization. It's a great place to network and build friendships that will last forever. Stay Classy!!!

Immediate Openings for Kenya Zoo Group Safari to Lewa Wildlife Conservancy



Travel with National BFR
Coordinator, Patty Pearthree
and Denise Wagner
as your trip leaders!

February 27- March 15, 2014
(see lewa.org).

See first hand how your Bowling For Rhinos
funds benefit wildlife and their
surrounding communities.

For more information on how to
reserve your spot on safari,
please contact ASAP:
ppear3@pear3.org / 919-678-0449

For a trip preview, visit: [pear3.org/
rhinosafari/Patty_Africa_2014_Safari_trip.pdf](http://pear3.org/rhinosafari/Patty_Africa_2014_Safari_trip.pdf)
See pear3.org/rhinosafari/
for additional Zoo Group Safari info.

COMING EVENTS

Post Your Upcoming Events here — e-mail shane.good@aazk.org

April 14-19, 2013

ABMA Annual Conference

Toronto, Canada

For more information, visit theabma.org.

April/May 2013

Chimpanzee Meeting and

Husbandry Workshop, Houston, TX

The Chimpanzee SSP and the Houston Zoo are hosting the next Chimpanzee Husbandry Workshop to take place April 30 – May 2, 2013. The Chimpanzee SSP meeting will precede the workshop on April 29, 2013. Please visit houstonzoo.doubleknot.com/event/chimp-husbandry-workshop-registration/1250219 for more information.

May 5-10, 2013

Eighth Biannual Rhino Keepers' Workshop

Hosted by San Diego Zoo Global. For Call for Papers and more information contact laubery@sandiegozoo.org

June 9-13, 2013

Shape of Enrichment Workshop

**Omaha's Henry Doorly Zoo and Aquarium
Omaha, Nebraska**

Hosted by the Omaha AAZK Chapter

For more information contact: robinfreise@hotmail.com or visit enrichment.org and click under "New Events"

June 23-26, 2013

Felid Tag Husbandry Course, plus...

June 27-29, 2013

AZA Felid TAG Mid-Year Meeting

**Hosted by Jacksonville Zoo and Gardens,
Jacksonville, FL**

For more information go to: felidtag.org or contact felidtag2013@jacksonvillezoo.org.

July 8-12, 2013

**Zoos and Aquariums Committing
to Conservation (ZACC)**

Hosted by Blank Park Zoo, Des Moines, Iowa.

Registration is available at blankparkzoo.com/index.cfm?nodeID=48429&audienceID=1.

Contact Jessie Lowry with questions at

jrlowry@blankparkzoo.org.

August 7-10, 2013

11th Annual Symposium on the Conservation

and Biology of Tortoises and Freshwater Turtles

Co-hosted by the Turtle Survival Alliance and the IUCN-TFTSG in St. Louis, Missouri.

Please visit turtlesurvival.org/get-involved/conference for more information, or contact Heather Lowe at Hlowe@turtlesurvival.org.

September 22-26, 2013

AAZK NATIONAL CONFERENCE

**Hosted by North Carolina Zoo and North
Carolina AAZK Chapter, Asheboro, NC**

For more information go to:

ncaazk.com/2013nationalconference.htm

October 13-17, 2013

WAZA Annual Conference

Hosted by Disney's Animal Kingdom. For more information go to: waza.org

October 15-18, 2013

**ICEE — International Conference on
Environmental Enrichment**

Hosted by the National Zoological Gardens of South Africa at the Kwalata Game Ranch, South Africa. For more information, go to nzg.ac.za/icee2013

October 2013

Advancing Bear Care 2013

Woodlands Wildlife Refuge, Clinton, NJ

The conference dates, hotel, program, and adjunct activities will be announced soon. For current information and updates check ABC 2013 UPDATES often.

bearcaregroup.org/#!/abc_2013_updates/c10h4

November 10-14, 2013

**Zoological Association of America (ZAA)
Annual Conference, Phoenix, AZ**

For more information go to zaa.org.

National Conferences



AZA

2013 - Kansas City, MO - September 7-12
2014 - Orlando, FL - September 12-17
2015 - Salt Lake City, UT - September 17-21

aza.org

AAZK

2013 - Asheville, NC - September 22-26
2014 - Orlando, FL - September 8-12
2015 - St. Louis, MO - Dates TBD

aazk.org

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Visit our website at www.animaledu.com, contact us at support@animaledu.com, or call toll free (866) 755-0448.



ANIMAL
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— AAZK ANNOUNCES NEW MEMBERS —

NEW PROFESSIONAL MEMBERS

Calvin Feil, Animal Adventures, Bolton (MA)
Heather Dorney, Animal Adventures, Bolton (MA)
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Danielle Balaguer, Elmwood Park Zoo, Norristown (PA)
Janine Tokarczyk, Conservators Center, Mebane (NC)
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Ashley Sackett, Lion Country Safari, Loxahatchee (FL)
Lori Scholl, Knoxville Zoo, Knoxville (TN)
Melissa Terwilliger, The Cleveland Museum of Natural History, Cleveland (OH)
Cale Nordmeyer, Minnesota Zoo, Apple Valley (MN)
Rebecca Duchild, Minnesota Zoo, Apple Valley (MN)
Matthew Mayer, Brookfield Zoo, Brookfield (IL)
Jami Pawlowski, Brookfield Zoo, Brookfield (IL)
Dane Jorgensen, Audubon Zoo, New Orleans (LA)
Heather Betz, Zoo of Acadiana, Broussard (LA)
Jennifer Gates, Zoo of Acadiana, Broussard (LA)
Jake Jachim, Cheyenne Mountain Zoo, Colorado Springs (CO)
Justin Brackett, Sea World, San Diego, (CA)
Kaysa Bryson, Fresno Chaffee Zoo, Fresno (CA)
Chantelle Edwards, Saskatoon Forestry Farm Park and Zoo, Saskatoon (Canada)

RENEWING CONTRIBUTING MEMBERS

Carol Fiertz, Bethesda (MD)
Natalie Lindholm, DeSoto (TX)
Verla Atkins, Atascosa (TX)

RENEWING INSTITUTIONS

Brandywine Zoo, Wilmington (DE)
National Zoo Library-Science Bldg., Washington (DC)
North Carolina Zoo Library, Asheboro (NC)
Tiger World, Inc., Rockwell (NC)
SFC Teaching Zoo, Gainesville (FL)
Tigers for Tomorrow Exotic Animal Preserve, Attalla (AL)
Kentucky Reptile Zoo, Slade (KY)
Michigan State University, Libraries Serials Acquisitions, E. Lansing (MI)
J. Otto Lottes Health Sciences Libr., University of MO-Columbia, Columbia (MO)
Tanganyika Wildlife Park, Goddard (KS)
Zoo of Acadiana, Broussard (LA)
Little Rock Zoo, Little Rock (AR)
Tiger Creek Wildlife Refuge, Tyler (TX)
TGR Exotics, LLC, Spring (TX)

AAZK Board of Directors CALL FOR NOMINATIONS



The American Association of Zoo Keepers has opened its Call for Nominations for the 2013 Election for the Board of Directors. Serving on the AAZK Board of Directors presents a perfect opportunity to take on a leadership position in AAZK and within the zoo profession. It offers you the opportunity to have a voice in the contemporary issues of our industry. It allows you to hone your skills in leadership, project management, team building, and working with a diverse group of individuals who are dedicated to professional animal care and conservation. If this sounds like a great opportunity to you, then now is the time to run for the AAZK Board of Directors!

Nomination forms will be due at the AAZK Administrative Office by February 28, 2013.

The nomination forms, and the criteria for nomination can be found in the Members' Only section of aazk.org. The 2013 Election will be done electronically, so you need to go to aazk.org to vote. Additionally, your Professional Membership status must be current and you must be registered on the Members' Only section of aazk.org. Here are the key dates of the Election:

- February 28, 2013 – Nomination forms are due at the AAZK Administrative Office
- April 1, 2013 – Viewing of candidate profiles opens in the Members' Only section of aazk.org
- April 15, 2013 – June 1, 2013 is the official voting period
- Results of the 2013 Election will be announced after the verification of ballots, approximately June 10, 2013.

Managing a Large Number of Animal Handlers in a Program Animals Setting

By

Caroline Ledbetter, Keeper II
Zoo Atlanta
Atlanta, GA

Training, documenting, and organizing animal usage in a Program Animals Department can be difficult when non-departmental animal handlers are using them for formal and informal program settings. This paper will cover how the Program Animals Department at Zoo Atlanta uses a standardized method for training and monitoring animal usage by animal handlers (docents, non-Program Animals staff members, and contracted education staff). Managing a large group of animal handlers can be a daunting task, but can be accomplished with the proper organization and follow through.

Program Animals

There are five full-time keepers in the Program Animals (PA) Department and approximately 70 animal handlers. The Program Animals Department at Zoo Atlanta has a very diverse animal collection, including mammals, reptiles, invertebrates, and birds. While there are birds in the collection, they are used only by Program Animals staff members due to the need for strong relationships to remain safe and the number of trained behaviors these birds know for use in shows. There is a very broad scope of programming provided to guests at Zoo Atlanta. Two venues, used only by PA staff, provide wildlife encounters in the traditional "show" sense; a free-flighted bird show takes place in our Wildlife Theater, while Amy's Tree Theater is a smaller, more intimate venue in which mixed-taxa shows take place. Informal animal encounters are never scheduled and can be found all over the zoo. There are a number of education programs (both on and off-site) that utilize the animal collection in their programming. Animals are also used for a variety of special events and private functions, as well as media and marketing events.

Staff members wishing to become animal handlers must be able to commit to attending two full-day training sessions, as well as keep up with monthly animal handling requirements. Docents must have fulfilled one year as a non-animal handling docent, be able to commit to attending two full-day training sessions, and be able to meet quarterly encounter requirements.

Animal Handler Training

Training consists of two full days split by an hour lunch break. Mornings take place in a classroom setting during which general guidelines and expectations are covered, while hands-on handling, packing, and transport information is taught in the afternoons. The second day of training also includes a section taught by education staff outlining how handlers are to interpret with the animals. After handler trainees have been instructed and guided, there is a written test and packing demonstration. Both "tests" are open book and graded; handlers that get two answers wrong on the written test or make a grievous mistake during the handling and packing demonstration are required to retest. All handlers are sent an electronic version of the "Wieland Wildlife Home Animal Handling Manual" (this document is a living document and constantly changing, new versions are sent to all handlers periodically) and there are hard copies in the building that handlers are encouraged to use while testing and then while working with the animals.

Advanced Animals

Two main factors are used to determine if an animal will be advanced: 1. Is the animal potentially dangerous to handlers? 2. Does the animal have trained behaviors for proper and safe handling?

There is currently one advanced animal in our collection, a prehensile-tailed porcupine (*Coendou prehensilis*). To become an advanced animal handler, a handler must have been in the program for



Prehensile-tailed porcupine (*Coendou prehensilis*)

a minimum of one year and in good standing; PA managers reserve the right to prohibit any handler from becoming an advanced animal handler. To maintain proficiency and familiarity, all handlers (staff and docent) must handle advanced animals twice a month. If these requirements lapse, a handler may be relieved of their advanced handler status without it impacting their regular handler status.

All animal training is done and monitored by PA staff; breakdowns in behavior may require an animal to be taken off use until the issue is resolved and staff are confident that behavior is strong.

Requirements and Monitoring – Staff

Staff animal handlers must handle an animal from all categories (i.e. snake, rabbit, turtle/tortoise, etc.) once a month for a minimum of five minutes. These requirements ensure that all staff members maintain proficiency and confidence with all animals in the collection. This is necessary because staff members are assigned specific animals for scheduled programs and must be comfortable handling any and all animals in the collection. Additionally, some contracted education staff may only be teaching 1 - 2 programs per month and could possibly work programs without handling any given animal for several months at a time. If a staff animal handler misses handling an animal from any category, they must make up their missed requirements by handling the animal(s) twice the following month or handling with a PA staff member. If requirements are not met three months in a row, the handler will be placed on inactive status and must retake the animal handling course to regain active status.

Requirements and Monitoring – Docents

Historically, docent animal handlers were expected to maintain the same requirements as staff handlers. These requirements were proving to be extremely difficult for docents to maintain due to their schedules and limited participation in scheduled programs. To address the situation, docent animal handlers are not required to handle all animals monthly. Instead, they must meet quarterly requirements of at least four hours worth of guest interaction per quarter. Docents are strongly encouraged to handle the entire collection and vary the animals that they take out on encounter to promote familiarity with entire collection and ensure a varied guest experience. This system has not only made meeting requirements more achievable for our docent handlers, it has also increased the time that docents spend

Figure 1. This checklist is filled out by the lead instructor during Night Crawler programs or by any handler bringing animals back from an encounter after hours.

DATE:

Wieland Wildlife Home - After-Hours Animal Handling Responsibilities

Lead Instructor	Initial
All enclosures are secure	
All animals have access to water	
No hides under heat lamps	
Dowel rods are in correct location in reptile enclosures	
Animal room doors are closed and lights are off	
All instructors have signed out their animals correctly for the evening	
Crates and coolers cleaned and returned to appropriate locations	
All "Out on Program" tags removed	
Pick up all trash and return supplies to appropriate locations	
Additional handling properly documented	
If necessary, leave note/message for WWH staff with any issues/changes	
Max fed	
Opus fed	

Other animals handled/ Notes for PA Staff:

out in the public, thus increasing animal visibility and our impact on zoo guests.

Accountability – Programs and Handling

Zoo Atlanta has many overnight programs and late events, so handlers are often in the building and handling animals without any keeper staff on grounds. In order to give accountability to handlers, we have developed several checklists to be filled out in staff members' absence. These checklists encourage handlers to double check that enclosures are secured and that all animals have food and water.

When after-hours programs take place, the lead Night Crawler (Zoo Atlanta's overnight program) instructor or any handler returning animals after keepers have left for the day are required to fill out a checklist (see Figure 1) to ensure animal safety. Any comments or concerns are also written on the sheet and allow keepers to know what took place and address any concerns, if necessary. There is also a checklist filled out by animal handlers during the work day when there is not a PA staff member present in the education animal building (see Figure 2).

All animal handlers, staff and docents alike, are held accountable via a three-strike system. If a minor breach in protocol occurs, PA staff will notify that handler so that the mistake is not made again in the future. If a handler repeatedly makes minor mistakes then they may be given a strike. Any breach in protocol that can lead to the injury of a handler, visitor, or animal is cause for an automatic strike. Any handler that receives three strikes in a 12-month period is put on the inactive list and must re-take

Figure 2. To maintain accountability during daytime hours, this checklist is filled out by animal handlers when there is not a PA staff member in the building.

Animals handled		Enclosure locked	Hides in place	Water in place	Time OUT:		Time IN:		Date:		PA staff member notified of AE (N/A or initial)
					Check tags to ensure they are correct	Signed out/in if went on program? (N/A or initial)	Questions directed to PA staff? (N/A or initial)				
1.											
2.											
3.											
4.											
5.											
6.											
7.											
8.											
9.											
10.											
11.											
12.											
13.											
14.											
15.											
Comments for WWH Staff:											

handler training if they wish to continue being an animal handler.

Communication

We have several ways for keeper staff and animal handlers to communicate with one another even though we do not come into personal contact very often. With so few keepers and so many handlers there is often limited opportunity for face to face communication.

Weekly Updates – These are e-mailed to our animal handlers on Mondays and contain important information in a consistent format (figure 3). We inform the handlers which animals are on stop (not to be handled), changes in protocol, and other important information. We have found that this format has worked because it provides a constant flow of information to handlers and ensures that all handlers are kept up-to-date on pertinent information in an ever-changing environment. These

Figure 3: A weekly update is sent out to all animal handlers on Mondays to facilitate communication between staff and animal handlers.



**Week of
May 14, 2012**

In shed: Kipira

On stop: Gus, Cairo, Nuru, Opus

"A" Snakes

Ramsay	Maize
Gus	Nyoka
Cooper	

The snakes listed are **UN**available for handling on **MONDAY** afternoon and all day **TUESDAY**.

If an animal assigned to your program is on **STOP**, what should you do?

If your animal is on stop, please substitute an appropriate animal that has not been used already and is not scheduled for use by a later program. A note should be left for PA staff either on the white board or on an after-hours checklist. Please let us know if you have any questions! Thanks!!

As long as Opus is on stop (and no, we do not have an idea of when he will be available for program use again), do not worry about meeting your monthly handling requirements with him. You will not be penalized for not handling him. We will notify you as soon as he is available again!

Please make sure that the clean-up kits are refilled and ready to go for the next handler to use!

This is not a 3-banded armadillo...



A big **THANK YOU** goes out to all of our animal handlers for being so diligent in recording your interactions with Violetta. We are almost halfway through with the study! Keep up the good work!!!

When removing the chinchillas from their enclosure, whether you are packing them for program or handling them, make sure that you close the door prior to turning away from the enclosure. Leaving the white board in to separate the enclosure does not make it secure; the chinchillas can easily move the divider. If you have any questions on how to secure the chinchilla while closing the enclosure door, feel free to ask any PA staff member and we will give you a hand! Thanks! ☺

Colored Tag System – To keep our animals and handlers safe we have developed a color-coded system that provides two-way, visual communication between PA staff and handlers. Red means that the animal is on stop and that their enclosure is not to be opened by anyone other than PA or veterinary staff. A yellow or blue tag lets the handler know that the animal is in a location other than their home enclosure. Yellow and blue tags are also labeled with the name of the location in which you can find the animal. A green tag means that the animal is out on program. These quick reference tags also communicate to keepers that an empty enclosure does not mean an escaped animal.

Sign Out Sheet/Program Analysis – Zoo Atlanta is concerned with green initiatives, and the PA department is no different. Instead of using a paper system to track animal usage and visitor impact numbers, we use another Microsoft Excel™ spreadsheet (see Figure 4). This spreadsheet contains the following information: date, name (of handler), animals, program type, time out, time in, and number of people impacted. Drop down menus are utilized where possible which decreases mistakes and makes the form more user-friendly. This spreadsheet also gives us the ability to categorize our information for easy reference in graph form. We are able to track and analyze animal usage, program frequency, and the number of guests impacted by each program type (see Figure 5). By tracking the

[illegible]

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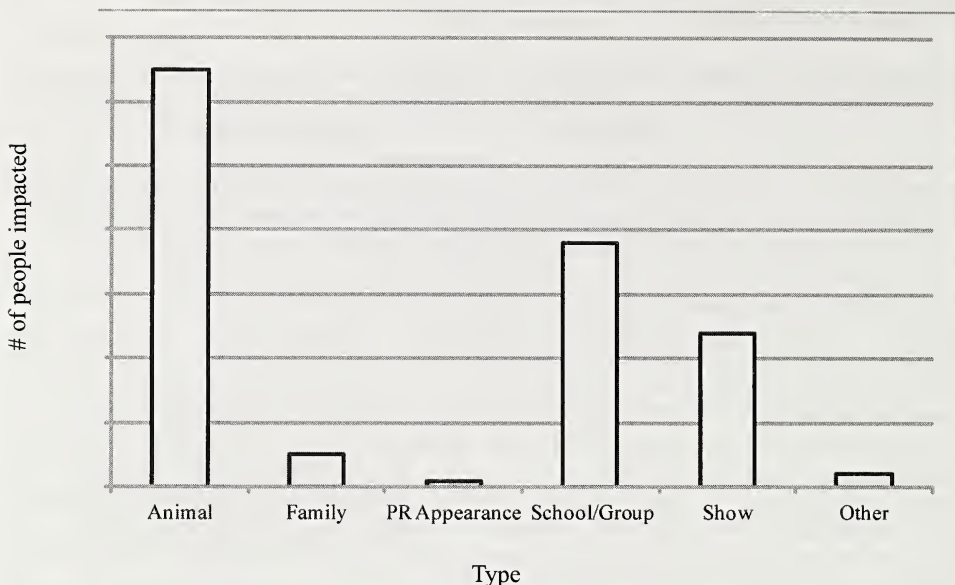


Figure 5. An example of one of the graphs produced by sign-out sheet. This graph shows the number of people (zoo visitors, school children, etc) impacted by each encounter type.

scope of our impact, we are able to modify programming appropriately to maximize this impact on guests and program participants.

By utilizing these tools, the program animals department at Zoo Atlanta is able to provide a safe and fulfilling working environment for our animals, handlers, and keeper staff. Standardizing the way that things are done ensures that everybody, even the newest animal handler, is on the same page and knows what is expected.

Special Call for Papers: Dedicated Issue on Gorillas



All papers on gorilla husbandry
and conservation welcome.

**Deadline for submissions has been
extended to April 1, 2013.**

Please reference the complete set of *AKF* submission
guidelines at aazk.org/akf-submission-guidelines/.

The Use of Vocal Playback as a Tool for Breeding in Captive Birds

By

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Tulsa Zoo and Living Museum

Tulsa, Oklahoma

Editor: Sammie Harvey

Introduction

The long-term sustainability of bird populations in zoos and aquariums is at a critical stage. Many avian species with a studbook are not at a long-term sustainable level. Of the 174 species of birds having studbooks, 14 are designated as Green, 82 are designated Yellow and 76 are designated Red. The studbooks that are designated Red have less than 50 birds in the population. A taxon is assigned Yellow if there is a population of 50 or more but there is not 90% genetic diversity past 10 generations. At this time the Plush-Crested Jay (*Cyanocorax chrysops*) population is at 51 with a sex ratio skewed to more males than females. This species has just recently been designated a Yellow SSP. A poor sex ratio and small population has warranted a research study that hopefully can improve breeding.

It is important to research new and unique tools that can be used to increase breeding success. Examples include using videos, mirrors and vocals as a way to increase breeding. With the success of using mirrors in the breeding of flamingos and the recent publishing of successful use of vocals in breeding Northern Bald Ibis (*Geronticus eremita*), these novel tools have warranted a second look with other species of birds with different natural behaviors. A possible decrease in species diversity in zoos in the future is due to: illegal wild bird trade that has caused strict import/export regulations and closed many countries for importation like Australia and many countries in South America; the threat of highly contagious and lethal zoonotic diseases that can be passed through birds to humans, for example avian influenza (H1N1) which has forced the United States to ban importation of birds from Asia; the strict quarantine due to Newcastle disease (*Paramyxovirus-1*) which has caused the price of many birds to rise extraordinarily high. The lack of holding space in zoos has forced institutions to make tough decisions on what species they are going to breed and what species they are going to phase out of their collections. The final reason is inability to successfully reproduce certain species in captivity. Hopefully institutions will begin to experiment on their own and see if the above mentioned novel tools can increase breeding for themselves.

The objective of this study was to see whether vocal playbacks affect the breeding behavior of captive passerine species housed in a 1 male/ 1 female enclosure. The study was conducted at Tulsa Zoo and Living Museum and focuses on Plush-Crested Jays (PCJ) (*Cyanocorax chrysops*). The observational study measured whether the introduction of vocal playbacks increases mating behavior by the male in order to mimic natural group behavior during breeding. Secondly, to determine if breeding behavior by both the male and female increases resulting from the introduction of vocal playbacks.

Vocalizations

Vocalizations were obtained from the Macaulay Library-Cornell University (ML-CU). Of the twenty – six (26) vocals obtained twelve (12) were chosen, ranging from .30 seconds to 8 minutes and this represents a variety of single and multiple bird calls. The criteria used for choosing the vocals were little to no background noise, clear vocals with little scratching and the vocals chosen had to be longer than one minute. The vocals were burned to a CD.

Materials

Standard CD player
12 ML-CU Vocals
Stopwatch
Clipboard
Pencil/Pen
Ethogram (Figure 1)
Data Collection Sheet (Figure 2)

Method

Stage One: Ethogram Development

Stage one of the study involved observing the focal species to obtain a baseline of behaviors in order to develop an ethogram. Four days a week for 20 minutes the plush-crested jays were observed, and expressed behaviors recorded for a total of two (2) weeks or eight (8) sessions. The ethogram was divided into two (2) categories: individual behavior (expressed by a single bird), and social behavior (expressed by two or more birds). For the individual behavior section, two (2) observers were used to ensure accuracy and discredit bias. Initial development began by listing known behaviors previously witnessed by the two observers, and additional behaviors being added as necessary.



Vocal playbacks had a strong effect on pair-bonding in plush crested jays.

During this time, simultaneous research was being conducted to form a baseline of behaviors previously witnessed during breeding to develop the social behavior section. Research included discussions with other keepers, documentation of other *Corvidae* breeding behaviors, and personal knowledge.

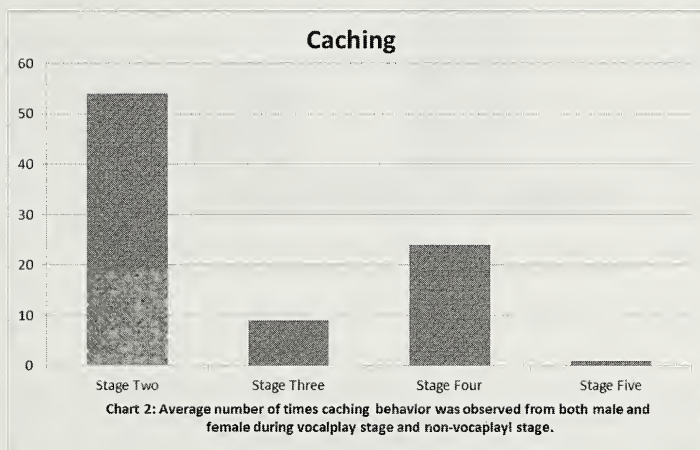
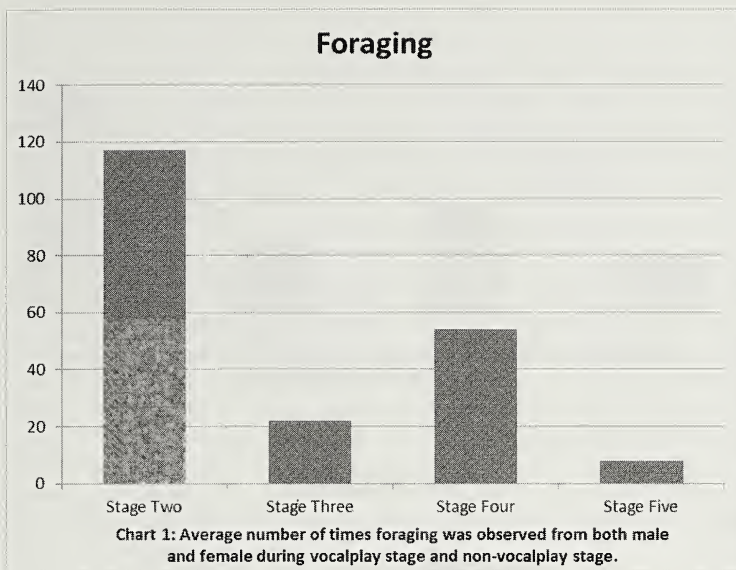
The ethogram was used to develop the datasheet. In the data sheet, male and female behaviors were listed separately. The data sheet also included the observer's name, date and time of day, and other notes.

Stage Two: Non- Vocal Playback Observations

In stage two, the focus species was observed for four days a week in 20-minute sessions. This stage helped to develop a baseline of the pairs' typical behavior. During sessions, the observer recorded all behaviors witnessed by the male and female on the data sheet developed in stage one. The observer also noted any additional behaviors or unusual environmental factors occurring during the sessions in the comments section of the data sheet.

Stage Three: Vocal Playback Observations

During this stage, vocals were introduced to the focus species using the same procedures and data sheet explained in Stage Two. Using a standard CD player and stopwatch, the 12 ML-CU vocals were played outside the exhibit for four days in 20-minute sessions. A new playback was used for each session to avoid familiarity. After 20 minutes, recorded observations immediately ceased. Any additional significant behaviors witnessed were recorded in the comments section but not counted as a behavior on the data sheet. For example, after one session ended, copulation was witnessed within a few minutes. This was recorded as a comment and did not count towards the behaviors witnessed during the vocal playback session.

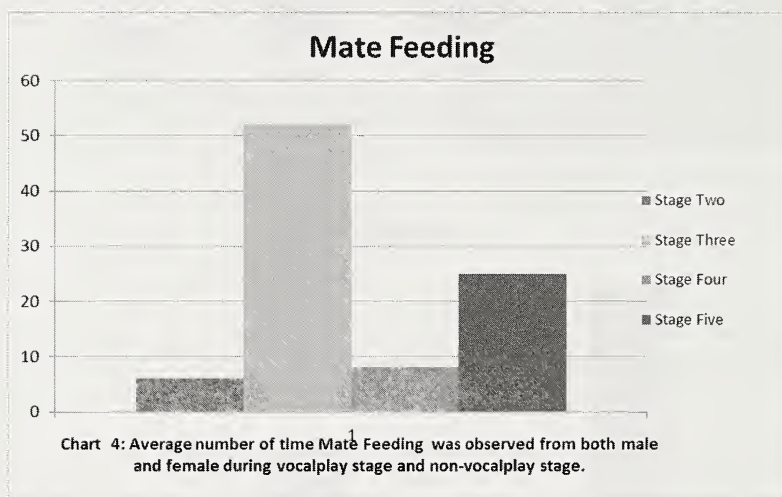
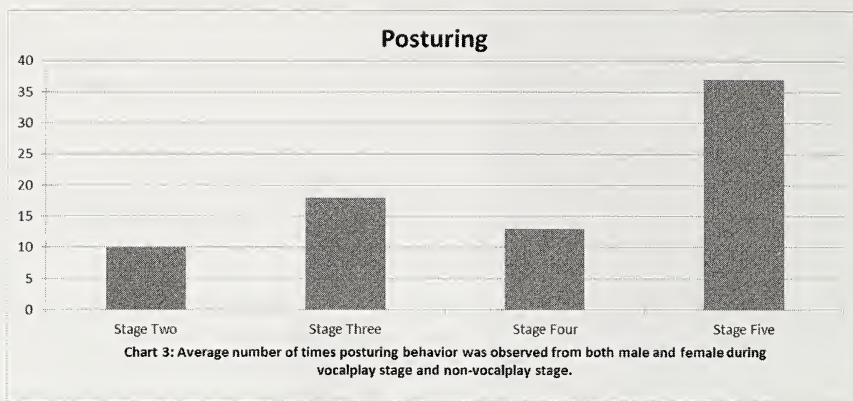


Stages Four and Five: Repeat

During stages four and five, non-vocal playback and vocal playback sessions were repeated, respectively, using the same procedures and data sheets used by each observer. This stage provides additional data and helps to validate or refute those behaviors recorded during stages two and three.

Results

As seen in Charts 1 and 2, the prominent behaviors recorded during Stage Two were foraging and caching. After vocal playbacks were introduced in Stage Three, the prominent behaviors were replaced with mate feeding and posturing as shown in Chart 3 and 4. For the purposes of this paper, posturing refers to the male or female moving their body and head lower or higher than their mate. It also refers to the female dropping her body low to the ground or perch and displaying her tail in the air for purpose of breeding. When vocals were removed in Stage Four a decrease in mate feeding and posturing occurred with increase in foraging and caching. In the final stage of the research the vocals were reintroduced with results mimicking Stage Three results with an increase in mate feeding.



Signs of male competition were not observed during this study as originally hypothesized; however, an increase in breeding behavior between the focus species was observed with the female displaying more than the male. During vocal playback sessions (Stages 3 and 5), the female was observed feeding the male or eliciting feeding from the male and posturing more often than during non-vocal playback sessions (Stages 2 and 4). Copulation resulted in the laying of one egg during Stage 5 which abruptly stopped the study. Shortly afterwards, the male broke the egg. The study was not resumed since a negative impact on breeding could not be ruled out after successful egg laying. Unfortunately, further copulation was not witnessed nor was an egg produced

Discussion

Vocal playbacks in lab studies have shown a positive effect in female zebra finches (*Taeniopygia guttata*). In Wass' research on Zebra Finch colony playbacks and their effects, he states "Playback appears to influence the rate at which females became physiologically ready for fertilization. They also found that females exposed to elevated song rates tended to lay larger clutches than females in the control colonies" (Wass et al., 2005). Also, a recent study by Dr. Alan Clark on a captive colony of Northern Bald Ibis (*Geronticus eremita*) found that "acoustic enrichment, through playbacks of conspecific breeding vocalization, is an effective and inexpensive tool to increase reproductive

behaviors in captive colonial bird species” (Clark et al., 2011). In a similar study performed on white-crowned sparrows (*Zonotrichia leucophrys*), Baker concludes that “female mountain white-crowned sparrows are responsive to male songs of their natal dialect and virtually unresponsive to male song of alien dialect.” They found that when playing male vocals to white-crown sparrow females the females displayed more when the vocals were from the same geographical area (native) compared to those from other geographical areas (non-native) (Baker et al., 1982). Unfortunately the role of dialect in captivity is unknown. Birds are placed together based on pedigree and dialect or geographic origin is not considered.

The study began with the idea of stimulating male-male competition through the re-creation of social settings in the wild. However, the study showed a surprising amount of breeding behavior and initiation from the female as opposed to the male. Also surprising was the lack of vocals observed from the focus species during vocal playback sessions. The original hypothesis is null; it is clear that male-male competition did not affect breeding in this study. However, the addition of vocal playback could increase the bonding of the pair through the re-created social setting. Wild species can live in groups of 4 -8 individuals, breaking into pairs during breeding seasons. For this reason it is safe to assume that vocal playbacks had a strong effect on pair bonding. Further research is needed on this subject. To date four institutions have agreed to re-create the study. If interested in participating in this vocal playback study please contact me at jhickman@tulsazoo.org. Any assistance would be appreciated.

Update

After presenting my research at the 2010 passerine workshop in the Philadelphia AAZK Conference I have been contacted several times by other institutions about a behavior that I have personally observed of plush-crested jays destroying nests and/or eggs. This can occur early in the nesting season or while the female is incubating eggs. Ted Fox, the director of Rosamond Gifford Zoo wrote the Corvid Husbandry and Management guide presented at the 2003 AZA Eastern Regional Conference where he wrote “encountered problem with captive rearing is predation of eggs and newly hatched young, particularly by the male” (Fox, 2003). I will be sending a survey to institutions housing PCJ in the hopes of trying to better understand this behavior, so institutions can make better informed decisions on husbandry and management.

Literature Cited

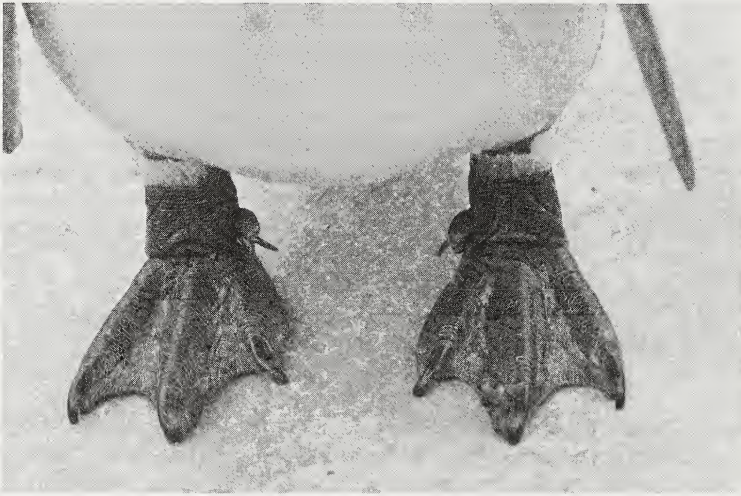
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Hey Doc! Why do some birds get bumblefoot (and others do not)?



Although bumblefoot can be relatively common in captive penguins and other birds, this wild magellanic penguin (*Spheniscus magellanicus*) has fine-looking feet.

This is a very good question, and the short answer is that it is not precisely understood why, when multiple birds are maintained under identical conditions, some individuals will get bumblefoot while others do not. However, a more useful and involved answer would be to review what is known about the causes of bumblefoot, and measures for prevention and treatment of it. As in many diseases, prevention is far better and easier than treatment, and this is an area in which pro-active efforts of the keeper can have great effect.

Bumblefoot is a complex condition, which is common in captive birds, but is most often encountered in penguins, raptors, flamingos, and waterfowl. It has been known for some time that birds that stand for prolonged periods on damp, hard, smooth surfaces, and especially surfaces covered in urates and feces, are predisposed to develop bumblefoot. Clinically, the lesions begin as a small ulceration of the foot pad, then infection of the soft tissues develops, leading to both swelling of the soft tissues and proliferation of the surrounding tissues. This causes significant thickening of the foot, and chronic lameness. Sometimes, development of the disorder can be traced to direct penetration of the foot pad by a sharp talon or projection from a perch such as a nail or wire, although an obvious inciting cause such as this is less common.^{1,2}

In order to prevent bumblefoot, it is generally agreed that the surfaces the birds stand on should be resilient, textured or rough (not smooth, but also not with projecting wires or thorns or edges that can cause punctures), clean, and dry.^{1,2,4}

Sanitation of the perching floors or (in the case of penguins and waterfowl) floor surfaces is one of the key elements of bumblefoot prevention, and it is in this area where the keeper can have great influence. Similarly, maintaining good perching for raptors is extremely important. Perch surfaces of rough, natural bark, or rope-wound perches, or even better, AstroTurf® covered perches, are critical

to prevention of bumblefoot. Keeping them clean and disinfected, and renewing them when they become excessively soiled, worn, or contaminated, is essential to maintaining good foot health. The perches and or flooring needs to dry out, too, so that the skin of the plantar surface of the foot does not become macerated (wet and soft) from being constantly wet (think about how soft your skin becomes if it is underneath a wet bandage for even a short time). This condition allows for invasion of bacteria and subsequent infection. Mistert used to control heat in summertime should not be allowed to keep perching continually wet. Resilient surfaces (such as poured-in-place rubberized flooring, or “Enka-Mat®” or similar products) should be utilized on flooring for penguins, flamingos and other waterfowl.⁴

There is abundant literature in the human medical field on development of pressure-sores or “decubital ulcers” because there are so many people that are paraplegic, quadriplegic, or otherwise bed-ridden, and are prone to similar lesions. Studies have shown that skin can withstand short-duration high level of pressure, but not chronic, constant, low level pressure. Therefore, it is better to have birds standing on resilient, textured surfaces upon which they move about and change positions occasionally, rather than a hard, smooth surface that causes constant low grade pressure across all of the foot. Therefore, encouraging activity and movement of the individuals is likely to be beneficial. It is conceivable, therefore, that differences in individual activity level, and relative times spent perching, flying (or swimming) may account for individual differences in susceptibility to development of bumblefoot. Indeed, differences in body mass and hence relative pressure on the foot pads of raptors have also been postulated to also affect the development of bumblefoot in birds. Remember, our animals are living in naturalistic habitats, where they may not be swimming as much as in nature, or standing on concrete (rather than soil and grass) or perching for many more hours (and not soaring) or standing in freshwater (rather than saltwater). All of these may diminish the integrity of the skin of the plantar surface of the foot, and also diminish blood circulation to the tissues. Anything we can do to mitigate the effects of captivity on the plantar surface of the foot will help reduce the incidence of bumblefoot.

One study conducted on over 800 raptors over a ten-year period showed that, statistically, hawks and eagles (eg. heavier-bodied birds) were more likely to develop bumblefoot, and that median time from admission to development of bumblefoot was only 52 days.¹⁰ Thus, it takes less than two months for these lesions to develop. Not surprisingly, birds with a leg fracture were four times more likely to develop bumblefoot.¹⁰ Clearly, when a bird “off-loads” a painful leg or foot by bearing more weight on the other one, it is not long before trouble develops in the more heavily-loaded foot.

Once “bumblefoot” has developed, it is challenging to treat and sometimes virtually impossible to eliminate, although it can be controlled. The infection is reported to be most often be caused by *Staph. sp.*, and the author’s clinical experience confirms this, although other bacteria may be present, and even secondary fungal infections by organisms such as *Candida* or *Aspergillus*.^{3,4,6,11,13} There is usually a significant inflammatory component to the process, with the tendons of the foot often being significantly inflamed and edematous. Appropriate antibiotic therapy, preferably based on culture and sensitivity, combined with anti-inflammatory drugs, as well as topical treatment (topical anti-microbial drugs, anti-inflammatories, and bandaging) are important to recovery.² Sometimes, surgical intervention is necessary to both remove caseous, inspissated pus from deep within the foot and to also obtain full or partial surgical closure of the wound.^{1,5,6,7} This is often more effective if intervention is initiated early rather than later in the progression of the lesion. Therefore, promptly discovering the condition and getting appropriate veterinary intervention dramatically increases the chances of a successful outcome.

Oral or injectable antibiotics and bandaging are virtually always part of the therapy. Regular bandage changes are important. The insertion of antibiotic impregnated polymethylmethacrylate beads (AIPMMA) has been successfully utilized to provide high, local penetration of antibiotics in severe cases.^{8,12} Additionally the use of custom-made silicon “shoes” to help off-load and protect the affected foot has also been advocated.^{7,9} In the author’s experience, these methods are indeed effective, and the “shoes” can also be made of other materials (such as dental alginate molding

material) and an opening made over the affected pad will even further help off-load the affected region and facilitate healing.⁹

Although infection can be controlled, and the wound can sometimes be surgically closed, the epithelium and scar tissue that will cover the lesion unfortunately usually does not have the same firm, keratinized surface typical of the plantar surfaces of normal bird feet. Therefore, the exposed epithelial surface, if large, tends to break down and have a tendency to become ulcerated and re-infected. After the initial treatment, therefore, periodic re-checks and treatment or bandaging is necessary to prevent regression. It therefore becomes something that one can control, but not necessarily eliminate, for the life of the bird. Sometimes, surgical de-bulking of the proliferating soft tissues can help to prevent additional focal pressure on one point and thus help to prevent recurrence.

A nutritional component to bumblefoot has been proposed, particularly in waterfowl.⁴ The importance of vitamin A in maintenance of good epithelium has been suggested to be a factor, although most raptors and penguins eat whole prey in captivity and/or prepared diets with adequate vitamin A. Similarly, the author has observed hyperkeratosis of waterfowl feet housed under conditions of good substrate and husbandry. There is an abundant literature in poultry documenting such problems in biotin deficient domestic fowl. Therefore, it would seem prudent to make sure that captive diets contain both adequate biotin and vitamin A. Vitamin C is important in wound healing, and adequate vitamin C would logically be important for birds recovering from bumblefoot.

Maintenance of appropriate perching or substrate, routine exams of the feet to detect problems early, and regular exams for treatment and control of the lesions are areas in which the animal keeper can help prevent and control bumblefoot in the birds under their care.

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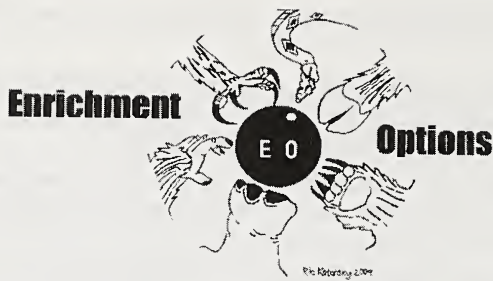
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Evaluating the Effectiveness of the Behavioural Enrichment Plan for 2.2 Ring-Tailed Lemurs (*Lemur catta*) at the Toronto Zoo

By

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Introduction

The objective of any behavioural enrichment program is ultimately to improve the psychological and physical well-being of captive species through a variety of methods (Shepardson, 1989). The majority of these methods are aimed at promoting the range and frequency of species-specific behaviours (i.e., foraging, playing, etc.) characteristic of their wild counterparts, eliminating or reducing abnormal and/or stereotypic tendencies (i.e., pacing), and encouraging the positive use of exhibit space (Cipreste et al., 2010). Behavioural enrichment is particularly important for captive species of primates due to their enhanced cognitive abilities and complex behavioural repertoires, and therefore propensity for boredom, stress and expression of abnormal behaviour in environments that lack adequate stimulation (NRC, 1998).



In March, 2011 the Toronto Zoo received five (3.2) juvenile (approximately 1 year old) ring-tailed lemurs (*Lemur catta*) to be housed within a newly renovated and naturalistic exhibit. An enrichment plan was immediately put into place that included providing the lemurs with a minimum of two enrichments daily (e.g. scatter feeding and/or hiding of food throughout the exhibit, smearing fruit onto exhibit surfaces, various food treats suspended from ropes or tree branches, apple browse, hand feeding by keeper, training, and numerous other enrichment devices). However, it is necessary to observe and evaluate the effectiveness of an enrichment plan once in place to determine if enrichment goals are being met successfully and make appropriate alterations to the existing plan if necessary (Coe, 1992). In order to evaluate the effectiveness of the existing enrichment protocol for the ring-tailed lemurs at the Toronto Zoo, the following questions were investigated:

- What is the range and frequency of natural behaviours exhibited by the lemurs?
- Is their activity budget comparable to non-captive populations?
- How much time do the lemurs spend interacting with the different enrichment devices currently being provided?
- How are the lemurs utilizing their exhibit space?

In addition to the above research objectives, this study also sought to determine the degree of visibility of the ring-tailed lemurs to zoo visitors.

Methods

To answer these questions, behavioural observations were conducted between 22 June 2011 and 05 July 2011. Only four (2.2) of the five lemurs were observed during this time, the fifth lemur having been relocated prior to the beginning of this study. During the observation period the author and a team of six trained volunteers collected a total of 90 hours of observational data. Out of these 90 hours of observation, the author personally collected 34 hours of data from 0900-1400 and 1400-1900 hours on alternating days recording the behaviour and exhibit use of the lemurs; while the volunteers collected 56 hours of data from 1000-1600 hours daily documenting behaviour and degree of visibility. In order to reduce inter-observer error, comprehensive instructions were provided to each volunteer, including a detailed ethogram constructed by the author, and meetings were arranged prior to the observation period for all of the volunteers to review the methodology and behaviour of ring-tailed lemurs. In addition, the author frequently visited the volunteers during their observation shifts to briefly supervise their collection of data and answer questions.

Scan sampling was chosen as the method of data collection due to the difficulty in distinguishing among the four lemurs, and the ease at which subsequent data entry and analyses can be performed. With scan sampling, the observer scans a group of animals for a short period (e.g. 30 seconds) and records the number of individuals that are (1) visible, (2) engaging in each behaviour, and (3) present within each exhibit location (Altmann, 1974). This process was repeated at regular intervals, every two minutes for 30 minute blocks alternating with 10 minute breaks throughout the observation shift. By using the scan sampling method, one is able to get a sense of variation among individuals without having to be able to identify and distinguish among each individual lemur.

Eleven behavioural categories were designated as behaviours of interest in this evaluation: *forage*, *locomote*, *groom*, *play*, *interaction with enrichment device*, *scent mark*, *aggression*, *rest*, *sleep*, *abnormal*, and *other*. With the exception of *interaction with enrichment device* and *abnormal*, these behaviours were chosen because they are characteristic of wild populations of ring-tailed lemurs (Savage, 2005; Simmen et al., 2010). *Interaction with enrichment device* was defined as a lemur having any part of its body in contact with the device at the time of the scan (Abt, 2011). In addition to these behavioural categories, seven exhibit locations were defined: *horizontal* (mulch, logs, rocks,

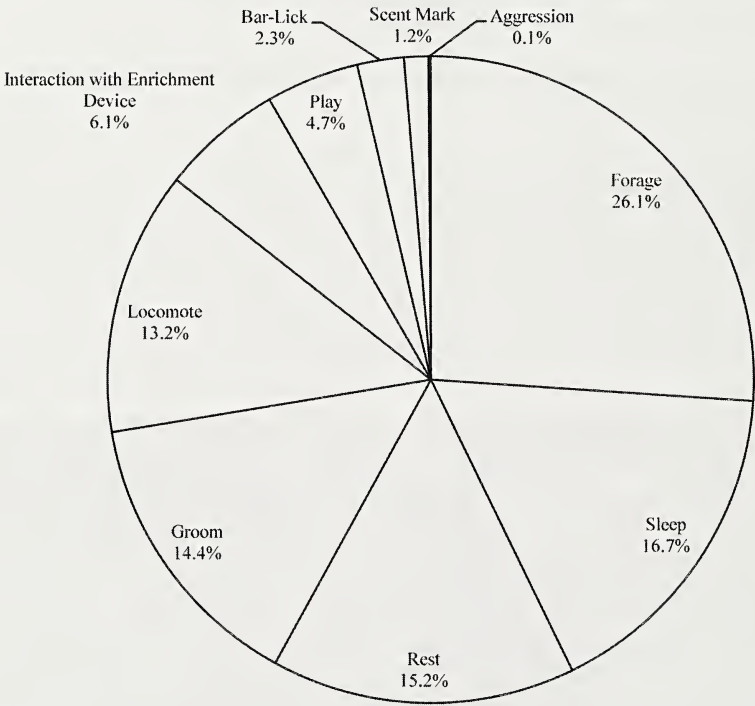
base of centre tree island), *vertical* (trees, pergola), *rope*, *window*, *fence* (perimeter of exhibit), *sand pit*, and *haybox*. Finally, visibility was defined in accordance with the visibility study performed at Disney’s Animal Kingdom (Kuhar et al., 2010), such that a lemur was considered “visible” if at least half of the lemur, including the head was visible at the time of the scan.

These data were then analysed using Microsoft® Office Excel to determine the average number of lemurs visible, the percent chance of observing at least one of the four lemurs, the proportion of lemurs engaging in each behaviour, and the proportion of lemurs located within each exhibit space per scan.

Results

Using these results, an activity budget was constructed to describe the range and frequency of behaviours exhibited by the ring-tailed lemurs. According to the results of these observational analyses, the ring-tailed lemurs at the Toronto Zoo exhibit a natural range of species-specific behaviours. See Figure 1 below.

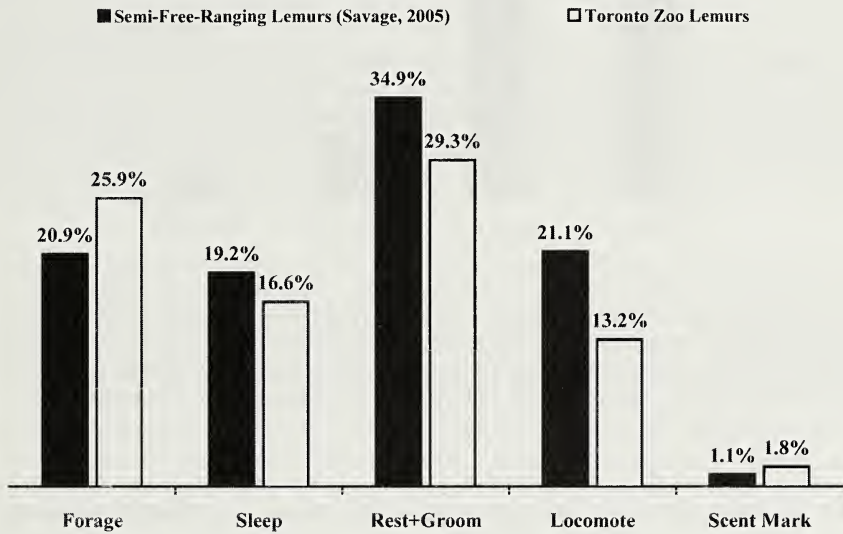
Figure 1. Daily Activity Budget of the Ring-Tailed Lemurs



Forage was observed to be the most frequent behaviour constituting 25.9% of their average daily activity budget, followed by *sleep* (16.6%), *rest* (15.0%), *groom* (self and other) (14.3%), *locomote* (13.2%), *interaction with enrichment device* (6.1%), *play* (4.7%), *abnormal* (bar-licking) (2.3%), *scent mark* (1.8%), and finally *aggression* (0.1%). As a result, 68.4% of the daily activity budget of the Toronto Zoo’s lemurs is spent engaging in active behaviour, defined as the sum of all behaviours subtracted by the sum of *rest* and *sleep*.

When compared to published reports of the daily activity budget of semi-free ranging lemurs on St. Catherine’s Island off the coast of Georgia, U.S.A. (Savage, 2005), the results of the analyses presented here indicate that the range and frequency of behaviours of the Toronto Zoo’s lemurs is notably similar to non-captive populations. Furthermore, results suggest that the Toronto Zoo’s lemurs spend more of their time foraging. See Figure 2 below.

Figure 2. Comparison of Lemur Activity Budgets:
Semi-Free-Ranging vs. Toronto Zoo



Unlike non-captive populations of ring-tailed lemurs, the Toronto Zoo’s lemurs were observed to spend 2.3% of their day licking the chain-link fence enclosing their exhibit (referred to here as “bar-licking”). All four were observed engaging in this abnormal behaviour, and they most often engaged in this behaviour as a group.

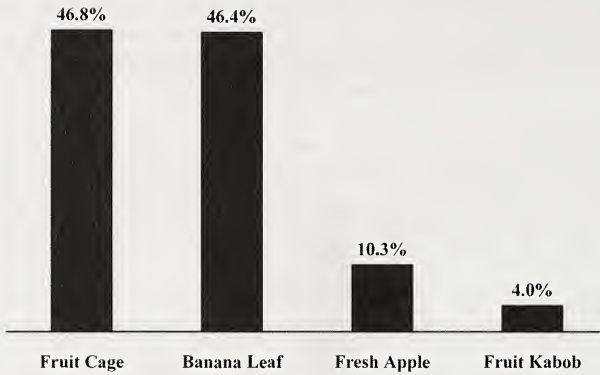
Apart from the frequent training, interaction with keepers, and daily scatter feeding that was observed; the following enrichment devices were also observed on exhibit during the observation period:

- Small cage with fruit locked inside (“fruit cage”)
- Variety of fruit kabobs
- Banana leaf
- Fresh apple browse

With the exception of the browse, all enrichment devices were suspended from the ropes hung throughout the exhibit.

The fruit cage and banana leaf were the most successful enrichment devices observed on their first day of use during the observation period. The lemurs spent 46.8% of their activity budget from 1000-1600 hours interacting with the fruit cage suspended from the rope, and 46.4% of their activity budget interacting with the suspended banana leaf. See Figure 3 below. All four lemurs were observed to

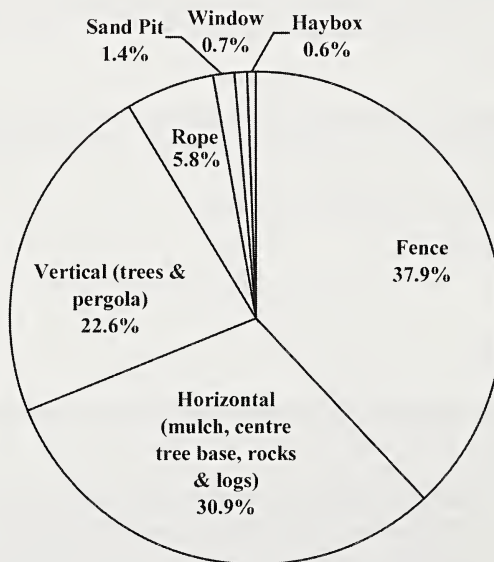
Figure 3. Percent of Ring-Tailed Lemur Daily Activity Budget Allocated to Interacting with Enrichment Device on its First Day of Introduction



interact with these devices, and often all at the same time (especially the banana leaf). No increase in aggression was observed during their interaction with these enrichment devices. In comparison, the fresh apple browse and fruit kabobs were not as successful as enrichment devices as the lemurs were only observed to interact with these devices for 10.3% and 4.0% of their day respectively.

Results of the data collected concerning the use of exhibit space indicate that the lemurs are utilizing

Figure 4. Average Daily Use of Exhibit Space of the Ring-Tailed Lemurs



all of the space available to them (See Figure 4, Page 79). However, they spent the majority of their time (37.9%) on or along the *fence* that encloses their exhibit. The amount of time spent along the *fence* was followed closely by the amount of time spent occupying the *horizontal* (30.9%), and *vertical* space (22.6%), and finally followed by the amount of time spent on the *ropes* (5.8%), in the *sand pit* (1.4%), and along the *window* (0.7%) and *haybox* (0.6%).

Lastly, an average of 2.6 out of four lemurs (65.9%) was recorded as visible to the public during the observation period. In addition, the percent chance of viewing at least one of the four lemurs was calculated to be 77.8% between 1000 and 1600 hours.

Discussion and Conclusions

The results of these observations indicate that the ring-tailed lemurs at the Toronto Zoo exhibit a range and frequency of behaviours that is equivalent to non-captive populations. During the observation period, scatter feeding of diet throughout the exhibit was provided on a daily basis. This is likely responsible for the high frequency of foraging behaviour observed in this group of lemurs, indicating that regardless of regular use, scatter feeding is a successful means of enrichment for ring-tailed lemurs that consistently promotes natural behaviour.

In contrast to the natural behaviour observed, the bar-licking behaviour exhibited by the lemurs is somewhat puzzling. The results of a relatively recent study determined that 13.2% of captive prosimians, and 6.4% of captive species of the genus *Lemur*, engage in stereotypical or abnormal behaviours (Tarou et al., 2005). According to Tarou et al. (2005), among prosimians, these behaviours typically consist of pacing, head tossing, somersaulting, over-grooming and self injurious behaviour. The bar-licking observed of the lemurs at the Toronto Zoo is unusual in this context. Furthermore, no decrease was observed in this activity on days when a novel enrichment device was introduced, such as the fruit cage and banana leaf. Therefore, this behaviour may be more indicative of a mineral deficiency than an abnormal behaviour resulting from stress or boredom. Future plans include introducing a mineral lick in an attempt to reduce or eliminate this bar-licking behaviour.

The lemurs spent a significant amount of their daily activity budget interacting with enrichment devices, particularly the suspended fruit cage and banana leaf. The low level of interaction with the apple browse is likely due to this form of enrichment having been used too frequently prior to the observation period, resulting in a loss of interest by the lemurs. In addition, the lack of time spent interacting with the fruit kabobs is largely a result of the length of time it required the lemurs to consume the suspended fruit (approximately two hours). In contrast to the kabobs, the fruit cage served as a simple barrier to the retrieval of the fruit and therefore increased the duration of time that the lemurs spent interacting with the device to achieve the same end. In addition, observations by keepers prior to this study indicate that the lemurs are not interested in food-related enrichment devices in which the food is not directly visible to them. Therefore, the fruit cage is an optimal enrichment device because it effectively illicit their attention due to the visibility of the fruit through the cage, and increases the duration of time spent interacting with the device before the fruit supply is exhausted.

Based on the standards set by Disney's Animal Kingdom, the ideal goal for animal visibility to zoo visitors is 80% (Kuhar et al., 2010). The slightly lower than ideal visibility of the lemurs is largely due to the amount of time they spent on or along the fence-line, an area where they are not easily viewed by the public. In order to increase the visibility of the lemurs at the Toronto Zoo, future adjustments to the existing enrichment protocol will include: focusing enrichment devices towards the centre of the exhibit or stationed directly in front of a window, introducing more living plants towards the centre of the exhibit to attract the lemurs, and finally the possible introduction of a heat lamp next to a window to increase visibility and encourage natural sunning behaviours.

Evaluating the effectiveness of enrichment procedures should be a mandatory component of any

behavioural enrichment program. Due to time constraints and resource limitations it is not always feasible to conduct extensive evaluations. However, the methods employed here can be easily modified and reduced in scale to be realistically incorporated into any existing enrichment protocol.

Acknowledgements

I would like to thank my supervisor Nicole Presley for her guidance and direction, and the keepers of the African Rainforest Pavilion for being so accommodating. I would also very much like to thank Karen Conway for coordinating the volunteers, and Chris Evans, Cathy Jordan, Martin Kelly, Pam Paterson, Denise Shea and Marilyn Schickluna for volunteering their time to collect the observational data included in this study. Thanks are also due to the Canadian Museums Association for funding this project. Finally, I would like to thank Lucy, Larry, Lionel and Lily (the lemurs) for never failing to entertain us throughout our observations.

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Where you can share your training experiences!

*Training Tales Editors – Jay Pratte, Henry Doorly Zoo;
Kim Kezer, Zoo New England; and Beth Stark-Posta, Toledo Zoo*

From Fear to Friend: Building Trust Between Keeper and Animal Through Training

*By Eunice Hui, Lead Keeper, and Molly Feldman, Keeper Apprentice,
CuriOdyssey, San Mateo, CA*

Aggression. Fear. Distrust. These are not the qualities keepers like to see in the animals for which they care; nor are they the qualities that make captive animal management easy. So when it was decided in the summer of 2009 that Mina, a North American badger (*Taxidea taxus*), would be started on a training program, this is what we were dealing with. After four years as a resident of CuriOdyssey (formerly known as Coyote Point Museum), she still showed an extreme lack of habituation which was expressed through a series of aggressive behaviors: hissing, grunting and shaking when the keepers entered the service area, she hid in her den both on exhibit and in her night quarters, quickly running outside in the morning, and sometimes refusing to come in at night. Needless to say, it was evident that something had to change. Given the many benefits of operant conditioning, a formal training plan was written for Mina with the following goals in mind: 1) Target training, 2) Desensitization to two trainers in the room, 3) Crate Training and 4) Injection training. But how do you train an animal that lacks the two most basic requirements for success: a willingness to approach a human being and a motivation to work, even for food? The answer, we discovered, is slowly, patiently, and to never underestimate what is possible when you give your time to even the most uncooperative of animals. This paper will discuss the challenges encountered and behavioral changes observed once training commenced, reinforcing the value of a positive keeper-animal relationship and its effect on captive animal welfare.

History

Mina, the North American Badger arrived at Coyote Point Museum in April 2005. Her transition was far from smooth once introduced to the exhibit. Each day she buried herself under the dirt, forcing the keepers to dig her out every evening before shifting her into the night quarters. She also managed to break through the fake rockwork and climb into a cement crevice inside of her den, making it impossible to gain access to her. Since she would not willingly come out during the day, Keepers had to devise a way to get her back into the night house overnight and trap her

in there so that the hole could be repaired. Many days of troubleshooting like this went by before Mina was able to enter her exhibit each day without any major problems. However, she continually appeared lethargic and spent most of the day hiding. Alloy [1979] states that inactivity displayed by an animal may be caused by learned helplessness, if the subject has the experience that there is no possibility to escape an environment perceived as negative. For a captive born animal, Mina appeared to have trouble coping with changes to her surroundings or daily routine and remained continually fearful, aggressive and uncooperative. Additionally, she was easily startled by loud noises (e.g. door slamming or the arrival of a garbage truck) and usually refused to come inside at night, leaving the keepers with no alternative but to use a herding board to coax her in. For these reasons, a training program was implemented with the hopes of improving Mina's quality of life and making management easier on both her and the keepers.

Preparation

There were many obstacles to overcome in the initial stages of Mina's training. The first was to find a food item for which she would be motivated to train. A variety of treats were offered to her each day but she showed no interest in anything except her normal diet, particularly the meat. The second obstacle was that due to her temperament, direct contact was impossible and training would have to take place via protected contact in her night quarters (Photo 1).

This limited the ways in which we could get close enough to her or get her attention if she chose not to approach us herself. Further complicating matters was a third obstacle: she wouldn't approach anyone, ever. However all of this changed with the introduction of something that was not initially considered to be of importance: a new keeper.

It was decided early on that Molly Feldman, the Keeper Apprentice, would be put in charge of Mina's training. Molly had only been working at the museum for a few weeks and along with the other keepers, had been given the opportunity of trying to get Mina accustomed to hand feeding (using tongs) through the fence in her night quarters (Photo 2). Everyone had tried coaxing her out of her den each day but she wouldn't move, even for a piece of mouse or chicken. Instead she remained as hidden as possible, hissing and snarling at anyone who tried talking to her or came within her line of vision. It was therefore a surprise



Photo 1: (left) Night house set up
Photo 2: (below) Training Tools - Target Stick, Blunt Needle on Syringe, Feeding Tongs



when one day she cautiously made her way over to Molly, snatched the meat from the tongs and quickly retreated to her “safe place.” After seeing Mina respond to a new keeper with whom she had no previous associations, it was realized that this was the way to get her training program started. It was also decided that Mina would be trained with the meat from her diet since it seemed to be the only thing she ate consistently and would not be at risk of becoming overweight from the use of extra treats. With the initial obstacles seemingly overcome, the process of building a trusting relationship between badger and human began.

Training

Gaining Mina’s trust was critical to the success of her training plan. The first month was devoted to getting her comfortable enough with her trainer’s presence and allowing her to hand feed. This meant sitting on the ground outside of her run, offering pieces of food through the fence and waiting for a response. The environment had to be as secure as possible with few external noises and limited movement by the trainer. Sudden movements would quickly send her back into her den, hissing and shaking. After a few weeks of patiently encouraging her to eat from the tongs, Mina was already displaying less aggression and approached the trainer more readily. She had progressed from quickly taking the meat and leaving, to staying to chew one piece; then two, then three. Once she was consistently eating all the meat without retreating, it was decided that their relationship had a secure enough foundation to move forward and introduce the verbal bridge, “good”. At this point Mina was still very reactive to everything, voices being no exception, so the trainer began by whispering the bridge as Mina simultaneously took a piece of meat from the tongs. Her initial response was to hiss and retreat, come back for another piece and repeat. However after only a few sessions the trainer was able to speak louder and louder until Mina was accustomed to the regular volume of her voice.

The next stage was to desensitize Mina to movement, as any change in the trainer’s seated position would cause displays of disapproval. This began by slowly making small movements such as leaning to the side or stretching out a leg, all the while continuing to strengthen the bridge. This progressed to the trainer being able to stand up and sit back down, while reinforcing Mina for remaining calm throughout. By the end of the second month it seemed she was understanding the bridge and had even begun exhibiting signs of positive emotions associated with improved coping behavior, as pointed out by Boissy et al. (2007): “A number of signs can indicate positive experience in animals – for example, successful coping, reward and wanting, resulting in goal-directed behavior.” Mina was demonstrating less fear and aggression and was willingly participating in most training sessions. She seemed eager to approach the trainer and continually appeared interested and motivated. Thus with the bridge checked off the list and her trust in the trainer clearly established, Mina was ready to move on to learning other behaviors that would hopefully allow her transformation to continue.

The following eight months of training progressed very quickly. Training sessions were conducted five days per week, twice a day if time allowed. They initially took place in the morning and evening, but this was changed to a variable schedule as she was not always motivated during these times of the day. In the end, the unpredictability made her much easier to shift as she would eagerly come inside at any time, expecting a session to take place (Photo 3).

Unpredictability was also beneficial in eradicating the potential for superstitious behaviors. In the beginning, Mina was very sensitive to change. However once her behaviors became stronger, the trainer began to make changes such as re-arranging the furniture in her run, training occasionally with the guillotine door open, or leaving the radio turned up. While she was still sometimes spooked by an unforeseen noise, she very rarely ended her participation because of it. Each session began in the same place, the front left corner of the run, which became an unofficial station. She had developed a “calm position” during our desensitization stage where she would stick her nose through the fence and wait (Photo 4). The trainer took advantage of this and started by gently touching her on the nose with the target pole (the end of a broomstick which was padded for safety) and saying the word “Target”. This progressed to holding it against her nose for longer and longer periods of time before



Photo 3: Mina waiting to come inside for training

bridging. Eventually it was moved over a few inches, then a few feet, until she would consistently move to wherever it was placed. Later in the year, the trainer was able to use this behavior to train another: climbing the fence. By asking her to target above her head, she would pull herself up exposing her abdomen, and could be asked to climb higher or climb down simply by moving the target pole around. The pole was phased out and was replaced with hand cues in conjunction with a hold behavior so she did not climb down before being asked (Photo 5). These behaviors were all precursors to the goal of injection training, which would also require the essential element of touch. As Mina's behavior was changing throughout the year, so was her personality. Mina began exhibiting signs of positive emotions with improved coping behavior and demonstrating less fear and aggression. Once a timid badger, she was now bold enough to reach her arm through the fence with her paw if the trainer was not going fast enough. The trainer took advantage of this by capturing the behavior known as "Paw," in which Mina reached through the fence and placed her paw in the trainer's open palm. This became her strongest behavior and a consistent way to reward her if she was struggling with something else. It also introduced the concept of touch, which was extended to scratching her belly during a climb, and eventually to being poked on the flank with a capped pen in the beginning stages of injection training.

By this time, Molly's apprenticeship was coming to an end. It became necessary to begin introducing a secondary trainer and hopefully transfer the behaviors Mina had learned over the past eight months. As with everything else, this process required patience and persistence. Rather than being asked for behaviors, Mina was simply rewarded for staying calm and coming out of her den in the presence of a second person. Mina was not quite ready to train but was comfortable enough to take food from another person when her new trainer, Eunice Hui, was finally introduced. It was therefore decided that Eunice would begin building her own trusting relationship with Mina, by simply hand feeding her until Mina was prepared to move on.

Thanks to Molly's many months of hard work in establishing a baseline for training behaviors, Eunice was able to take over with minimal setbacks. She was introduced to Mina as a secondary trainer in February 2010 and became the primary in June 2010. The goals for Mina at that time were to tighten the criteria for some of her established behaviors, continue with injection training and begin crate training (Mina was to willingly enter her transport crate and allow the door to be closed and locked). This was no easy task as Mina had strong, negative associations with the crate due to years of forced entry for veterinary check-ups, weighing and other management needs. Mina's den



Photo 4: (above) Mina “calm position”, waiting for training

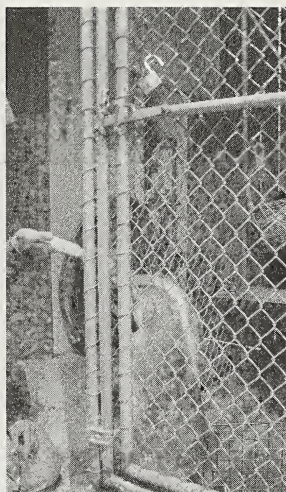


Photo 5: (right) Up behavior

in the night house was replaced with her crate. The trainer captured the behavior by saying “crate” every time she entered the crate. It took her about one month to enter the crate on command after the behavior was captured. It took almost a year of practice, including closing, locking and opening the door while she was inside, before the behavior was learned in full. Injection training was a less complicated process, although there were some minor issues to deal with along the way. The first thing that needed to be done was to improve the climbing behavior so that Mina was positioned with her left rear leg pressed against the fence. Having her climb in the corner of the run was the only way to accomplish this, so the trainer began rewarding her only when she was fully situated there. The day she realized what the trainer was doing, it was as if a light bulb turned on in her head! It was amazing to see her understand what the trainer wanted from her; she climbed up onto the chain link and scooted her body against the corner of the cage. It was truly a breakthrough as from this moment forward she consistently performed the behavior correctly and allowed the trainer to begin working on desensitization to the feel of an injection. Using the end of a pen, the trainer began by lightly touching Mina on the left flank. While she had no particular response to this, her “Hold” behavior was inconsistent and she began sliding down the fence prematurely. The trainer decided to extinguish that behavior and replace it with a cue for her to climb “down” on command. This worked magnificently and allowed the trainer to continue desensitizing her to the feel of a pen, syringe tip, blunt needle and finally a sharp needle (Photo 6). It took a total of six months but on the 11th of August 2011 she was successfully hand injected with a rabies vaccine, using a 19 gauge needle!

Challenges and Changes

It took two years of training before Mina consistently performed the injection and crating behaviors, and there were many setbacks along the way. During the late fall, she went through a natural period of inactivity for approximately two months in which she spent most of the day sleeping. Her decreased appetite at this time left her with no interest in training. We also experienced problems if we challenged her too much or moved too quickly. Her frustration was expressed by aggressive vocalizations or refusing to engage in training. Initially this meant regressing to a more simple behavior and moving forward again in smaller steps, even if this took weeks. Setbacks like this made it seem as though she was not progressing, especially in the beginning. However, slowly but surely, we began to see changes in her overall behavior. She started to anticipate training sessions and anytime she heard the door close in the service area, she would immediately wake up and wait for us to let her in for training. She also began to willingly come inside her night house without the keepers having to use a herding board and her interest in enrichment increased dramatically. Her improved temperament has also helped her in recovering from fearful experiences more quickly.



Photo 6: Injection training with blunt needle and syringe

Before training began, any sudden or loud noise would send her frantically into a hiding place, hissing and grunting as she went. In the initial stages of training this was enough for her to end a session and steps had to be taken to ensure there were as few “surprises” as possible. Today, though she may still react to an unexpected event, she is able to recover within a matter of seconds and continue with what she was doing.

Conclusion

Mina went from fearful, aggressive and reclusive to a confident, inquisitive and engaging animal. She can now be seen mid-day hopping around and actively exploring enrichment (Photo 7).

Such drastic changes truly illustrate that training increases positive keeper-animal interactions and results in enhanced captive animal welfare. Savastano et al. (2003) also reported positive changes in keeper-animal rapport as a result of operant conditioning, with a reduction in keeper-directed aggression and avoidance and an increase in eager approaches. The same changes were observed in

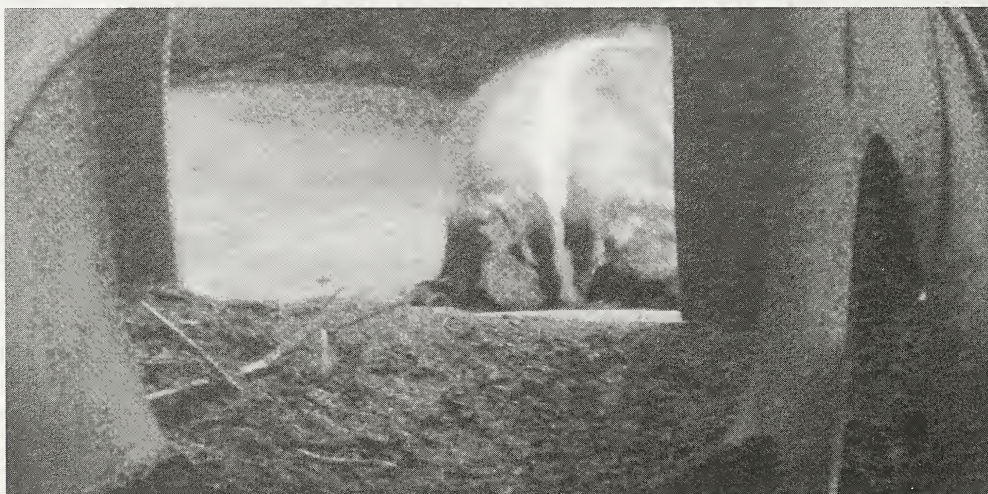


Photo 7: Mina engaged in foraging toys

Mina, leading us to the conclusion that the benefits of positive emotions and cognitive challenges should not be underestimated. Similar discussions in Boissy et al. (2007) and Meehan and Mench (2007) suggest some possible measures that might be incorporated into assessments of keeper-animal relationships. These include topics such as play and affiliative behaviors, vocalizations, anticipation of a positive reward and increased coping or cognitive abilities (Carlstead, 2009). It has been gratifying to see Mina move in a positive direction in each of these areas due to our training efforts. Working with her has been one of the most challenging, yet satisfying, endeavors in our careers and has truly reinforced the importance of a trusting relationship between animal and keeper.

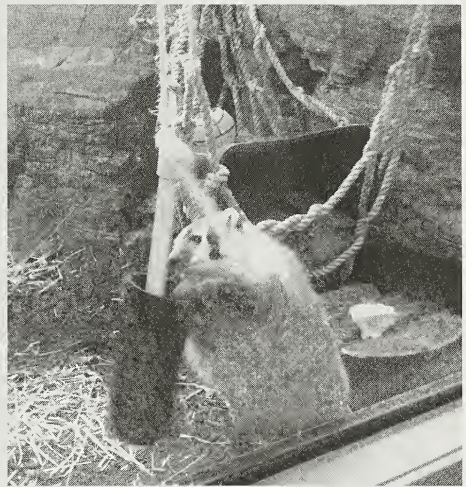


Photo 8: Mina engaged in foraging toys

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Photo Credits: Eunice Hui (author) and Jennifer Gale of CuriOdyssey

This paper was presented at both the 2012 AAZK and ABMA conferences.

Comments by Beth Stark-Posta:

This month's Training Tales is an excellent example of how patience and desensitization can positively affect an animal's training program and ultimately its quality of life. The animals in our care come from varied backgrounds and have different behavioral trends based on their natural history. Getting to know the individual and working with its strengths, as the authors did, can have far reaching benefits, both in terms of animal care, as well as psychological and emotional well-being.

Often it is something unexpected to us humans that makes a difference in the animal's comfort - in this case, a trainer with no previous reinforcement history with the animal. This shows us how important it is to keep an open mind and to continually be observant of the animal's behavior, its communication to us, and the multitude of stimuli in the animal's environment that may affect behavior. Thank you for your submission to Training Tales!

CONSERVATION STATION

Local Organic Farming Conserves and Enriches Everybody

By

*Mary Ann Cisneros, Keeper
Mesker Park Zoo and Botanic Garden
Evansville, Indiana*



Loretta Manning harvesting tomatoes
(photo by Loretta Manning)



Seton Harvest produce from one pick up
(photo by Mary Ann Cisneros)



Sarge, Military Macaw with corn
(photo by Jessa McCauley)



Tucker, bushbaby with peas
(photo by Jessa McCauley)

Mesker Park Zoo AAZK tried something new this past year. We participated in a conservation project which gave us the added bonus of receiving enrichment for our animals. We joined a CSA! CSA stands for Community Supported Agriculture and is basically a cooperatively run farm.

Seton Harvest is the CSA we chose, for many reasons. It is Certified Natural; it is close to the zoo; the required volunteer hours are not extravagant; and they offer a wide range of seasonal produce. We received management and vet approval to give the produce to the animals and we were off!

Here is the breakdown of our responsibility in Seton Harvest. With the help of our docents, we purchased a half share in the cooperative at a cost of \$350. Every week during the growing season, on a day we designated, we were able to pick up produce. The amount of produce that was available was determined by the harvest. Shareholders acknowledge that there is risk and sometimes the harvest is bountiful and sometimes it is not. If we are unable to pick up our share in any given week, that amount of produce would be donated to a local food bank. Shareholders are also expected to give at least six hours of service to the farm, whether by weeding, harvesting, washing of the produce or helping out during distribution days.

This whole endeavor was and is immensely satisfying on so many levels! This past summer we got an abundance of produce that the animals do not normally receive, really enriching their diets. Additionally, AAZK members were able to meet and share stories with members of the community who also believe in organic practices and what CSAs can offer. The excitement was palpable each week when pickup day arrived because all keepers; whether they are part of AAZK or not, were able to partake in the bounty. Most of all, we know we are doing community-based conservation – not just for a specific animal but for the habitat as a whole. We are very much looking forward to the 2013 growing season and hope it is as abundant as last year!

When you join a CSA you are accomplishing numerous conservation goals: supporting a local farmer, boosting the local economy by keeping food dollars in state, preserving land from development and industry, reducing environmental travel costs, and growing food that is organically healthy. Mesker Park Zoo Keepers, as CSA shareholders, are giving back locally while promoting environmental land practices. You could do the same in your area! Look up a CSA near you!

Here is a list of produce grown in our neck of the woods:

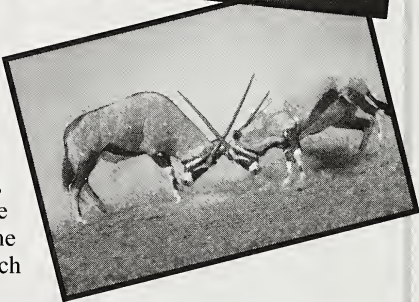
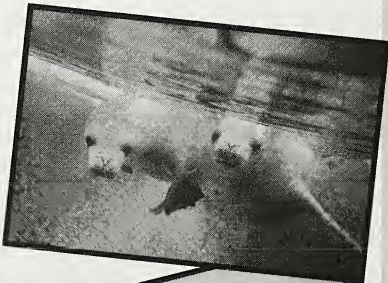
Asian green leeks	Tomatoes	Sweet potatoes
Beets	Lettuce	Turnips
Broccoli	Melons	Winter squash
Carrots	Okra	Zucchini
Cauliflower	Onions	Kale
Sweet corn	Peas	Garlic
Eggplant	Potatoes	Green beans
Fresh herbs	Radishes	Spinach

ATTENTION ALL PHOTOGRAPHERS!

***AKF* Needs Your Photos**

Attention all photographers, the *AKF* needs your photos as potential cover photos and special feature photos throughout the issue. All photos need to be high resolution, 2625 x 3375 pixels or greater, 300 dpi or greater in resolution, 1MB or greater. All photographers will need to submit a photo release form that can be found at aazk.org/animal-keepers-forum/aazk-photo-model-release-form/. Photos that clearly depict facility logos and behind-the-scenes shots will need permission of the facility to be used.

Subjects for the photos should revolve around animal husbandry, conservation, education/interpretation, professional development, significant achievements in the industry (births, exhibits, staff, etc.), and can also include some of the more humorous or unique situations that we all come across each day in our occupations. Captions for each photo should also be submitted.



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